United Utility Companies, Inc.
Docket No. 2009-479-W/S

BEFORE THE

PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

PREPARED DIRECT TESTIMONY

OF

PAULINE M. AHERN, CRRA
PRINCIPAL
AUS CONSULTANTS

CONCERNING

FAIR RATE OF RETURN

RE: UNITED UTILITY COMPANIES, INC.

FEBRUARY 2010

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I. INTRODUCTION

Q. Please state your name, occupation and business address.

A. My name is Pauline M. Ahern and I am a Principal of AUS Consultants. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

Q. Please summarize your educational background and professional experience.

A. I am a graduate of Clark University, Worcester, MA, where I received a Bachelor of Arts degree with honors in Economics in 1973. In 1991, I received a Master of Business Administration with high honors from Rutgers University.

In June 1988, I joined AUS Consultants as a Financial Analyst and am now a Principal. I am responsible for the preparation of all fair rate of return and capital structure exhibits for AUS Consultants. I have offered expert testimony on behalf of investor-owned utilities before twenty-five state regulatory commissions. The details of these appearances, as well as details of my educational background, are shown in Appendix A supplementing this testimony.

I am also the Publisher of AUS Utility Reports (formerly C.A. Turner), responsible for the production, publication, distribution and marketing of these reports. AUS Utility Reports provides financial data and related ratios as well as merger and acquisition activity covering more than 100 public utility companies on a monthly, quarterly, and annual basis. Coverage includes electric, combination gas and electric, gas distribution, gas transmission, telephone, water and international utilities.

I also calculate and maintain the A.G.A. Index under contract with the American Gas Association (A.G.A.) which serves as the benchmark against which the performance of the American Gas Index Fund (AGIF) is measured on a monthly basis. The A.G.A. Index and AGIF are a market capitalization weighted index and mutual fund, respectively, comprised of the publicly-traded corporate members of the A.G.A.

I have co-authored a working paper with Frank J. Hanley, a Principal and Director of AUS Consultants and Richard A. Michelfelder, Ph.D., a professor of Finance at The School of Business, Rutgers University entitled "New Approach to Estimating the Cost of Common Equity for Public Utilities" which was presented at the Advanced Workshop in Regulation and Competition at the 28th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI) at Rutgers University on May 14, 2009.

I have co-authored an article with Frank J. Hanley, a Principal & Director of AUS Consultants entitled "Comparable Earnings: New Life for an Old Precept" which was published in the American Gas Association's Financial Quarterly Review, Summer 1994. I also assisted in the preparation of an article authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of Public Utilities Fortnightly.

I am a member of the Society of Utility and Regulatory Financial Analysts (formerly the National Society of Rate of Return Analysts) serving as President for 2008-2010 and 2006-2008 and Secretary/Treasurer for 2004-2006.

In 1992, I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the National Society of Rate of Return Analysts. This designation is based upon education, experience and the successful completion of a comprehensive written examination.

I am an associate member of the National Association of Water Companies, serving on its Finance/Accounting/Taxation Committee; a member of the Energy Association of Pennsylvania, formerly the Pennsylvania Gas Association; and a member of the American Finance and Financial Management Associations.

Q. What is the purpose of your testimony?

A. The purpose is to provide testimony on behalf of United Utility Companies, Inc. (United or the Company) relative to the range of overall rate of return which it should be afforded the opportunity to earn on its jurisdictional rate base.

Q. What is your recommended range of overall rate of return?

A. I recommend that the Public Service Commission of South Carolina (PSC SC or the Commission) authorize the Company the opportunity to earn a range of common equity cost rate of 10.55%-12.80% on the common equity financed portion of its jurisdictional rate base. A common equity range cost rate of 10.55%-12.80% results in a range of overall rate of return of 8.45% - 9.50% based upon the consolidated capital structure at December 31, 2008 of Utilities, Inc., the parent of United, which consisted of 53.30% total debt and 46.70%

common equity, at a debt cost rate of 6.60% and my recommended common equity cost rate range of 10.55%-12.80% as summarized on Table 1 below:

Table 1

	Capital Structure Ratios	Cost Rate	Weighted Return
Long-Term Debt	53.30%	6.60%	3.52%
Common Equity	46.70	10.55%-12.80%	4.93%-5.98%
Total	100.00%		8.45%-9.50%

Q. Have you prepared an exhibit which supports your recommended range of common equity cost rate?

A. Yes, I have. It has been marked for identification as Exhibit No. ___ and consists of Schedules PMA-1 through PMA-11.

II. SUMMARY

Q. Please summarize your recommended range of common equity cost rate.

A. My recommended range of common equity cost rate of 10.55%-12.80% is summarized on Schedule PMA-1, page 2. Because United's common stock is not publicly traded, a market-based common equity cost rate cannot be determined directly for United. Consequently, in arriving at my recommended range of common equity cost rate of 10.55%-12.80%, I assessed the market-based cost rates of companies of relatively similar risk, i.e., proxy group(s), for insight into a recommended common equity cost rate applicable to United and suitable for cost of capital purposes. Using other utilities of relatively

comparable risk as proxies is consistent with the principles of fair rate of return established in the Hope[1] and Bluefield[2] cases, adding reliability to the informed expert judgment necessary to arrive at a recommended common equity cost rate. However, no proxy group(s) can be selected to be identical in risk to United and therefore, the proxy group(s)' results must be adjusted, if necessary, to reflect the greater relative business risk of United, as will be subsequently discussed in detail.

Consistent with the Efficient Market Hypothesis (EMH) which will be discussed in more detail below, my recommendation results from the application of four well-tested market-based cost of common equity models, the Discounted Cash Flow (DCF) approach, the Risk Premium Model (RPM), the Capital Asset Pricing Model (CAPM), and the Comparable Earnings Model (CEM).

The results derived from each are as follows:

[1] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

[2] Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

Table 2

	Proxy Group of Six AUS Utility Reports Water Companies	Proxy Group of Eight AUS Utility Rpts. Gas Distribution Companies
Discounted Cash Flow Model	11.49%	8.85%
Risk Premium Model	11.07	10.82
Capital Asset Pricing Model	11.32	10.26
Comparable Earnings Model	14.00	NMF
Indicated Range of Common Equity Cost Rate Before Financial and Business Risk Adjustment	12.25%	9.90%
Business Risk Adjustment	0.55	0.65
Indicated Range of Common Equity Cost Rate after Adjustment for Business Risk	12.80%	10.55%
Recommended Range of Common Equity Cost Rate	10.55% - 12.80%	

After reviewing the cost rates based upon the four models, I conclude that common equity cost rates of 12.25% and 9.90% are indicated based upon the application of all four models to the market data of the proxy groups of six AUS Utility Reports' water companies and eight AUS Utility Reports' natural gas distribution (LDCs), respectively, before any adjustment for business and/or financial/credit risk. These indicated common equity cost rates were then adjusted upward by 55 basis points (0.55%) and 65 basis points (0.65%), respectively, to reflect United's increased business risk, due to its smaller size relative to both proxy groups. After adjustment, as will be discussed in detail subsequently, the risk-adjusted range of common equity cost rate is 10.55% - 12.80%, which is also my recommendation and is applicable to the Company's requested common equity ratio of 46.70% at December 31, 2008.

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III. GENERAL PRINCIPLES

Q. What general principles have you considered in arriving at your recommended range of common equity cost rate of 10.55%-12.80%?

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of a product or service. In the case of regulated public utilities, regulation must act as a substitute for such marketplace competition. Therefore, marketplace data must be relied upon in assuring a common equity cost rate appropriate for ratemaking purposes in order to assure that the utility can fulfill its obligations to the public and provide adequate service at all times. This requires a level of earnings sufficient to maintain the integrity of presently invested capital and permit the attraction of needed new capital at a reasonable cost in competition with other firms of comparable risk, consistent with the fair rate of return standards established by the U.S. Supreme Court in the Hope and Bluefield cases cited previously. Consequently, in my determination of common equity cost rate, I have evaluated data gathered from the marketplace for utilities as similar in risk as possible to United.

IV. BUSINESS RISK

Q. Please define business risk and explain why it is important to the determination of a fair rate of return.

A. Business risk is the riskiness of a company's common stock without the use of debt. Examples of business risk include the quality of management, the

regulatory environment, customer mix and concentration of customers, service territory growth and the like, which have a direct bearing on earnings.

Business risk is important to the determination of a fair rate of return because the greater the level of risk, the greater the rate of return investors demand, consistent with the basic financial precept of risk and return.

Q. Please discuss the business risks facing the water industry in general.

A. One of the major risks facing the water and wastewater utility industry is related to replacing aging transmission and distribution systems. Although Value Line Investment Survey[3] (Value Line) observes the following about the water utility industry, it applies equally to the wastewater utility industry as many of the water companies followed by Value Line also have wastewater operations:

> These stocks, although up, have lost some of their luster since our April report. Indeed, the group, as a whole, has fallen from the upper echelon of the *Value Line Investment* universe for Timeliness, as the broader market showed some glimpses of rallying, and now sports an average rank.
>
> Financing issues raise some concerns, longer-term, however, and limit the group's 3- to 5-year appeal. In fact, not a single stock in this industry stands out for 3- to 5-year appreciation potential, as rising infrastructure costs threaten to erase the bulk of future profit advances.
>
> The water utilities is [sic] an increasingly capital intensive industry. Many infrastructures are outdated and will require heavy investment in order to make the necessary repairs. Greater EPA requirements only make things more difficult, as infrastructure costs are estimated at hundreds of millions of dollars over the next decade.
>
> Cash is at a premium in this space, however, with most companies sporting highly leveraged balance sheets and nominal cash reserves. That said, debt and stock issuances have become, and are likely to remain, commonplace as providers struggle to foot the bill.

[3] Value Line Investment Survey, July 24, 2009.

> Unfortunately, the increased costs associated with such financial undertakings, i.e., steeper interest rates and higher share counts, are likely to dilute share earnings growth as well as shareholder gains.

Also in its 2009 infrastructure Fact Sheet[4] published by the American Society of Civil Engineers (ASCE) they state:

> America's drinking water systems face an annual shortfall of at least $11 billion to replace aging facilities that are near the end of their useful lives and to comply with existing and future federal water regulations. This does not account for growth in the demand for drinking water over the next 20 years. Leaking pipes lose an estimated 7 billion gallons of clean drinking water a day.

In addition, because the water and wastewater industry is much more capital-intensive than the electric, natural gas or telephone industries, the investment required to produce a dollar of revenue is greater. For example, it took $3.44 of net utility plan on average to produce $1.00 in operating revenues in 2008 for the water utility industry. In contrast, for the electric, combination electric and gas, natural gas or telephone utility industries, on average it took $1.87, $1.36, $0.89 and $0.87, respectively, to produce $1.00 in operating revenues in 2008. And, because investor-owned water and wastewater utilities typically do not receive federal funds for infrastructure replacement, the challenge to investor-owned water and wastewater utilities is exacerbated and their access to financing is restricted, thus increasing risk.

The National Association of Regulatory Commissioners (NARUC) has also highlighted the challenges facing the water and wastewater industry stemming from its capital intensity. NARUC's Board of Directors adopted a

[4] 2009 American Society of Civil Engineers, Report Card for American's Infrastructure 2009.

resolution in July 2006, taking the position that[5]:

> WHEREAS, To meet the challenges of the water and wastewater industry which may face a combined capital investment requirement nearing one trillion dollars over a 20-year period, the following policies and mechanisms were identified to help ensure sustainable practices in promoting needed capital investment and cost-effective rates: a) the use of prospectively relevant test years; b) the distribution system improvement charge; c) construction work in progress; d) pass-through adjustments; e) staff-assisted rate cases; f) consolidation to achieve economies of scale; g) acquisition adjustment policies to promote consolidation and elimination of non-viable systems; h) a streamlined rate case process; i) mediation and settlement procedures; j) defined timeframes for rate cases; k) integrated water resource management; l) a fair return on capital investment; *and* m) improved communications with ratepayers and stakeholders; *and*
>
> WHEREAS, Due to the massive capital investment required to meet current and future water quality and infrastructure requirements, adequately adjusting allowed equity returns to recognize industry risk in order to provide a fair return on invested capital was recognized as crucial…
>
> RESOLVED, That the National Association of Regulatory Utility Commissions (NARUC), convened in its July 2006 Summer Meetings in Austin, Texas, conceptually supports review and consideration of the innovative regulatory policies and practices identified herein as "best practices;" *and be it further*
>
> RESOLVED, That NARUC recommends that economic regulators consider and adopt as many as appropriate of the regulatory mechanisms identified herein as best practices…

The water and wastewater utility industry also experiences lower relative depreciation rates. Lower depreciation rates, as one of the principal sources of internal cash flows for all utilities, mean that water and wastewater utility depreciation as a source of internally-generated cash is far less than for electric, natural gas or telephone utilities. Water and wastewater utilities' assets have

[5] "Resolution Supporting Consideration of Regulatory Policies Deemed as 'Best Practices'", Sponsored by the Committee on Water. Adopted by the NARUC Board of Directors, July 27, 2006.

longer lives and, hence, longer capital recovery periods. As such, water and wastewater utilities face greater risk due to inflation which results in a higher replacement cost per dollar of net plant than for other types of utilities. Water utilities experienced an average depreciation rate of 2.5% for 2008. In contrast, in 2008 the electric, combination electric and gas, natural gas or telephone industries, experienced average depreciation rates of 3.7%, 3.7%, 4.0% and 7.7%, respectively.

In addition, as noted by Standard & Poor's (S&P)[6]:

> Standard & Poor's expects the already capital-intensive water utility industry to become even more so over the next several years. Due to the aging pipeline infrastructure and more stringent quality standards, the U.S. Environmental Protection Agency's (EPA) foresees a need for $277 billion to upgrade and maintain U.S. water utilities through 2022, with about $185 billion going toward infrastructure improvements. In addition, about $200 billion will be needed for wastewater applications, which suggests increased capital spending to be a long-term trend in this industry.
>
> In line with these trends, many companies have announced aggressive capital spending programs. Forecast capital spending primarily focuses on infrastructure replacements and growth initiatives. Over the past five years, capital spending has been equivalent to about three times its depreciation expense. However, companies are now forecasting spending to be at or above four times depreciation expense over the intermediate term. For companies in regulatory jurisdictions that provide timely cost recovery for capital expenditures, the increased spending is likely to have a minimal effect on financial metrics and ratings. However, companies in areas without these mechanisms, earnings, and cash flow could be negatively affected by the increased spending levels, which over the longer term could harm a company's overall credit profile.
>
> Due to the high level of capital spending, U.S. investor-owned water utilities do not generate positive free cash flow. This, coupled with the forecast increase in capital spending over the

[6] Standard & Poor's, Credit Outlook For U.S. Investor-Owned Water Utilities Should Remain Stable in 2008 (January 31, 2008) 2, 4.

> intermediate term, will require additional access to capital markets. We expect rated water companies to have enough financial flexibility to gain that access. Ratings actions shouldn't result from this increased market activity because we expect companies to use a balanced financing approach, which should maintain debt near existing levels.
>
> Moody's[7] also notes that:
>
> We expect that the credit quality of the investor-owned U.S. water utilities will likely deteriorate over the next several years, due to ongoing large capital spending requirements in the industry. Larger capital expenditures facing the water utility industry result from the following factors:
>
> - Continued federal and state environmental compliance requirements;
> - Higher capital investments for constructing modern water treatment and filtration facilities;
> - Ongoing improvement of maturing distribution and delivery infrastructure; and
> - Heightened security measures for emergency preparedness designed to prevent potential terrorist acts.
>
> Given the overwhelming importance of protecting the public health, the water utility industry remains regulated by the federal and state regulatory agencies. As a result of this importance, the level of state regulators' responsiveness is critical in enabling the water utilities to maintain their financial integrity. In addition, when utilities are permitted a fair rate of return and timely rate adjustments to reflect the costs of providing this essential service, they will be more able to implement the necessary safeguards to protect the public health.

Also, both the Congressional Budgeting Office (CBO) and the Environmental Protection Agency (EPA) have addressed the necessary future growth in water and wastewater utility infrastructure. In November 2002, the CBO published a study entitled, "Future Investment in Drinking Water and Wastewater

[7] Moody's Investors Service, Global Credit Research, "Credit Risks and Increasing for U.S. Investor Owned Water Utilities", Special Comment (January 2004) 5.

Infrastructure" in which it concluded that[8]:

> CBO estimates that for the years 2000 to 2019, annual costs for investment will average between $11.6 billion and $20.1 billion for drinking water systems and between $13.00 billion and $20.9 billion for wastewater systems.

These estimates, over the ten years ending 2019, total from $116.0 - $201.0 billion for drinking water systems and between $130.0 - $209.0 billion for wastewater systems, totaling $246.0 - $410.0 billion for the water and wastewater industry combined.

Similarly, the EPA states the following[9]:

> The survey found that the total nationwide infrastructure need is $334.8 billion for the 20-years period from January 2007 through December 2026. With $200.8 billion in needs over the next 20 years, transmission and distribution projects represent the largest category of need. This result is consistent with the fact that transmission and distribution mains account for most of the nation's water infrastructure. The other categories, in descending order of need are: treatment, storage, source and a miscellaneous category of needs called "other". The large magnitude of the national need reflects the challenges confronting water systems as they deal with an infrastructure network that has aged considerably since these systems were constructed, in many cases, 50 to 100 years ago.

In addition, the water utility industry, as well as the electric and natural gas utility industries, faces the need for increased funds to finance the increasing security costs required to protect the water supply and infrastructure from potential terrorist attacks in the post-September 11, 2001 world.

In view of the foregoing, it is clear that the water and wastewater utility industry's high degree of capital intensity and low depreciation rates coupled

[8] "Future Investment in Drinking Water and Wastewater Infrastructure", The Congress of the United States - Congressional Budget Office (November 2002) ix.

[9] "Fact Sheet: "EPA's 2007 Drinking Water Infrastructure Needs Survey and Assessment", United States Environmental Protection Agency, Office of Water, February 2009, 1.

with the need for substantial infrastructure capital spending and increased anti-terrorism and anti-bioterrorism security spending, requires regulatory support in the form of adequate and timely rate relief, as recognized by NARUC, so water and wastewater utilities will be able to successfully meet the challenges they face.

Q. Does United face additional extraordinary business risk?

A. Yes. United faces additional extraordinary business risk due to its smaller size relative to the proxy groups because, all else equal, size has a bearing on risk.

Q. Please explain why size has a bearing on business risk.

A. Smaller companies are simply less able to cope with significant events which affect sales, revenues and earnings. In general, the loss of revenues from a few larger customers, for example, would have a greater effect on a small company than on a much larger company with a larger customer base. In addition, the effect of extreme weather conditions, i.e., prolonged droughts or extremely wet weather will have a greater effect upon a small operating water utility than upon the much larger, more geographically diverse holding companies.

Further evidence of the risk effects of size include the fact that investors demand greater returns to compensate for a lack of marketability and liquidity for the securities of smaller firms. Because United is the regulated utility to whose rate base the Commission's ultimately allowed overall cost of capital and fair rate of return will be applied, the relevant risk reflected in the cost of capital applied to

that rate base must be that of United, including the impact of its small size on common equity cost rate. United is significantly smaller than the average company in the proxy group based upon the results of my study of the market capitalization of the proxy group of six AUS Utility Reports water companies and proxy group of eight AUS Utility Reports natural gas distribution companies (LDCs). As of September 15, 2009, as shown on page 3 of Schedule PMA-1 which also summarizes the group's average market capitalization and in Table 3 below:

Table 3

	Market Capitalization(1) ($ Millions)	Times Greater than the Company
Proxy Group of Six AUS Utility Reports Water Companies	$757.405	23,668.9x
Proxy Group of Eight AUS Utility Reports Gas Distribution Cos.	1,453.855	60,577.3
United Utility Companies, Inc.	0.032 (2) 0.024 (3)	

(1) From Schedule PMA-1, page 3.
(2) Based upon the average market-to-book ratio of the proxy group of six water companies.
(3) Based upon the average market-to-book ratio of the proxy group of eight LDCs.

Because United's common stock is not publicly traded, I have assumed that if it were, its common shares would be selling at the same market-to-book ratio as the average market-to-book ratio for each proxy group, or 200.0% and 151.3%, respectively, on September 15, 2009 as shown on page 4 of Schedule PMA-1. Hence, United's market capitalization is estimated at $0.032 million based upon the average market-to-book ratio of the six water companies and

$0.024 million based upon the average market-to-book ratio of the eight LDCs. In contrast, the market capitalization of the average AUS Utility Reports water company was $757.405 million on September 15, 2009, or over 23,600 times larger than United's estimated market capitalization and $1.454 billion for the average AUS Utility Reports LDC, or over 60,500 times larger than United's estimated market capitalization. It is conventional wisdom, supported by actual returns over time, that smaller companies tend to be more risky causing investors to expect greater returns as compensation for that risk.

Q. Does the financial literature affirm a relationship between size and common equity cost rate?

A. Yes. Brigham[10] states:

> A number of researchers have observed that portfolios of small-firms have earned consistently higher average returns than those of large-firms stocks; this is called "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; what *the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.* (italics added)

V. FINANCIAL RISK

Q. Please define financial risk and explain why it is important to the determination of a fair rate of return.

A. Financial risk is the additional risk created by the introduction of senior capital, i.e., debt and preferred stock, into the capital structure. In other words, the higher the proportion of senior capital in the capital structure, the higher the

[10] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989) 623.

financial risk.

In November 2007, S&P first published its electric, gas, and water utility ratings rankings lists in a framework consistent with the manner in which it presents is rating conclusions across all other corporate sectors. At the time S&P stated[11]:

> Incorporating utility ratings into a shared framework to communicate the fundamental credit analysis of a company furthers the goals of transparency and comparability in the ratings process.
>
> * * *
>
> The utilities rating methodology remains unchanged, and the use of the corporate risk matrix has not resulted in any changes to ratings or outlooks. The same five factors that we analyzed to produce a business risk score in the familiar 10-point scale are used in determining whether a utility possesses an "Excellent," "Strong," "Satisfactory," "Weak," or "Vulnerable" business risk profile.

Pages 1 through 9 of Schedule PMA-2 describe the utility bond rating process. Pages 10 through 15 describe S&P's expanded Business Risk/ Financial Risk Matrix which was published in May 2009 in an effort to augment its independence, strengthen the rating process and increase S&P's transparency to better serve its markets (see page 11 of Schedule PMA-2). The most recent Business Risk / Financial Risk Matrix is shown in Table 1 on page 11 of Schedule PMA-2 and financial risk indicative ratios for utilities shown in Table 2 on page 13. Notwithstanding the metrics published in Table 2, S&P states:

> The rating matrix indicative outcomes are what we typically observe—but are not meant to be precise indications or guarantees of future rating opinions. Positive and negative

[11] Standard & Poor's – Ratings Direct – "U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix" (November, 30, 2007) 2.

nuances in our analysis may lead to a notch higher or lower than the outcomes indicated in the various cells of the matrix.

As shown on Schedule PMA-9, page 2, the average S&P bond rating (issuer credit rating), business risk profile and financial risk profile of the six water companies is A+ (A), Excellent and Intermediate, while the average for the eight LDCs are A (A), Excellent and Significant.

Q. Nevertheless, can one still measure the combined business risks, i.e., investment risk of an enterprise using bond ratings and credit ratings?

A. Yes, similar bond ratings/issue credit ratings reflect and are representative of similar combined business and financial risks, i.e., total risk. Although specific business or financial risks may differ between companies, the same bond rating indicates that the combined risks are similar as the bond rating process reflects acknowledgment of all diversifiable business and financial risks in order to assess credit quality or credit risk. For example, S&P expressly indicates that the bond rating process encompasses a qualitative analysis of business and financial risks (see pages 3 through 9 of Schedule PMA-2). While not a means by which one can specifically quantify the differential in common equity risk between companies, the bond (credit) rating provides a useful means to compare/differentiate investment risk between companies because it is the result of a thorough and comprehensive analysis of all diversifiable business risks, i.e., investment risk.

VI. UNITED UTILITY COMPANIES, INC.

Q. Have you reviewed financial data for United?

A. Yes. Incorporated in 1983, United provides water and sewer service to over 90 water and 1,650 wastewater customers. These customers are located in six counties throughout South Carolina. United is a wholly-owned subsidiary of Utilities, Inc. Thus, the Company's common stock is not publicly traded.

VII. PROXY GROUPS

Q. Please explain how you chose the proxy group of six AUS Utility Reports water companies.

A. The basis of selection for the proxy group of six AUS Utility Reports water companies was to select those companies which meet the following criteria: 1) they are included in the Water Company Group of AUS Utility Reports (September 2009); 2) they have Value Line or Reuters consensus five-year EPS growth rate projections; 3) they have positive Value Line five-year DPS growth rate projections; 4) they have a Value Line adjusted beta; 5) they have not cut or omitted their common dividends during the five years ending 2008 or through the time of the preparation of this testimony; 6) they have 60% or greater of 2008 total net operating income derived from and 60% or greater of 2008 total assets devoted to regulated water operations; and 7) which, at the time of the preparation of this testimony, had not publicly announced that they were involved in any major merger or acquisition activity.

Q. Please describe Schedule PMA-3.

A. Schedule PMA-3 contains comparative capitalization and financial statistics for the six AUS Utility Reports water companies for the years 2004-2008. Page 1 contains a summary of the comparative data for the years 2004-2008. Page 2 contains notes relevant to page 1, as well as the basis of selection and names of the individual companies in the proxy group, while page 3 contains capital structure ratios based upon total permanent capital (excluding short-term debt) by company and on average for the years 2004-2008.

During the five-year period ending 2008, the historically achieved average earnings rate on book common equity for this group averaged 9.91%. The average common equity ratio based upon total permanent capital (excluding short-term debt) was 50.60% for the five-years ending 2008, while the five-year average dividend payout ratio was 69.21%.

Total debt as a percent of EBITDA for the years 2004-2008 ranged from between 3.52 and 3.97 times, averaging 3.71 times, while funds from operations relative to total debt ranged from 16.80% to 21.00%, averaging 19.21%.

Q. Please explain how you chose the proxy group of eight AUS Utility Reports natural gas distribution companies.

A. Because of the small number of publicly traded water companies available for use as proxies for United as well as the limited availability of comprehensive investment analyst coverage for those companies, I have also utilized a proxy group of gas distribution companies. Like water companies, these gas distribution

companies deliver a commodity, i.e., natural gas to customers through a similar distribution system whose service rates of return are set by the regulatory ratemaking process. The basis of selection for the proxy group of eight LDCs was to include those companies which meet the following criteria: 1) they are included in the Natural Gas Distribution and Integrated Gas Company Group of AUS Utility Reports (September 2009); 2) they have Value Line or Reuters consensus five-year EPS growth rate projections; 3) they have positive Value Line five-year DPS growth rate projections; 4) they have a Value Line adjusted beta; 5) they have not cut or omitted their common dividends during the five years ending 2008 or to the time of the preparation of this testimony; 6) they have 60% or greater of 2008 total net operating income derived from and 60% or greater of 2008 total assets devoted to regulated gas distribution operations; and 7) which, at the time of the preparation of this testimony, had not publicly announced that they were involved in any major merger or acquisition activity.

Q. Please describe Schedule PMA-4.

A. Schedule PMA-4 contains comparative capitalization and financial statistics for the eight AUS Utility Reports natural gas distribution companies for the years 2004-2008. Page 1 contains a summary of the comparative data for the years 2004-2008. Page 2 contains notes relevant to page 1, as well as the basis of selection and names of the individual companies in the proxy group, while page 3 contains the capital structure ratios based upon total permanent capital (excluding short-term debt) by company and on average for the years 2004-2008.

During the five-year period ending 2008, the historically achieved average earnings rate on book common equity for this group averaged 10.90%. The five-year period ending 2008 average common equity ratio based upon permanent capital (excluding short-term debt) was 49.87%, while the five-year average dividend payout ratio was 64.07%.

Total debt as a percent of EBITDA for the years 2004-2008 ranged between 3.41 and 3.67 times, averaging 3.59 times during the five-year period, while funds from operations relative to total debt ranged from 16.41% to 21.24%, averaging 19.13% during the five-year period.

VIII. COMMON EQUITY COST RATE MODELS

A. The Efficient Market Hypothesis (EMH)

Q. Are the cost of common equity models you use market-based models, and hence based upon the EMH?

A. Yes. The DCF model is market-based in that market prices are utilized in developing the dividend yield component of the model. The RPM is market-based in that the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment bond/credit risk. In addition, the use of betas to determine the equity risk premium also reflects the market's assessment of market/systematic risk as betas are derived from regression analyses of market prices. The CAPM is market-based for many of the same reasons that the RPM is market-based i.e., the use of expected bond (Treasury bond) yields and betas. The CEM is market-based in that the process of selecting the comparable risk non-

utility companies is based upon statistics which result from regression analyses of market prices and reflect the market's assessment of total risk. Therefore, all the cost of common equity models I utilize are market-based models, and hence based upon the EMH.

Q. Please describe the conceptual basis of the EMH.

A. The EMH, which is the foundation of modern investment theory, was pioneered by Eugene F. Fama[12] in 1970. An efficient market is one in which security prices reflect all relevant information all the time, with the implication that prices adjust instantaneously to new information, thus reflecting the intrinsic fundamental economic value of a security.[13]

As noted by Brealey and Myers[14], the generally accepted "semistrong" form of the EMH, which asserts that all publicly available information is fully reflected in securities prices, i.e., fundamental analysis cannot enable an investor to "out-perform the market", is generally held to be true because the use of insider information often enables investors to earn excessive returns by outperforming the market. This means that all perceived risks are taken into account by investors in the prices they pay for securities. Investors are aware of all publicly-available information, including bond ratings, discussions about companies by bond rating agencies and investment analysts as well as the various cost of common equity methodologies (models) discussed in the financial literature. In an attempt to

[12] Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work" (Journal of Finance, May 1970) 383-417.

[13] Morin, Roger A., New Regulatory Finance (Public Utility Reports, Inc., 2006) 279-281.

[14] Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance, 5th Edition, (McGraw-Hill, 1996) 329.

emulate investor behavior, no single common equity cost rate model should be relied upon exclusively in determining a cost rate of common equity and the results of multiple cost of common equity models should be taken into account.

Furthermore, there is substantial support in the academic literature for the need to rely upon more than one cost of common equity model in arriving at a recommended common equity cost rate.

In view of the foregoing, it is clear that investors are or should be aware of all of the models available for use in determining a common equity cost rate. The EMH requires the assumption that, collectively, investors consider them all.

B. Discounted Cash Flow Model (DCF)

Q. What is the theoretical basis of the DCF model?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting the cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Thus, the dividend yield on market price plus a growth rate equals the capitalization rate, i.e., the total return rate expected by investors.

Q. Which version of the DCF model do you use?

A. I utilize the single-stage constant growth DCF model because, in my experience, it

is the most widely utilized version of the DCF used in public utility rate regulation. In my opinion, it is widely utilized because utilities are generally in the mature stage of their lifecycles and not transitioning from one growth stage to another. This is especially true for water utilities.

All companies, including utilities, typically go through typical life cycles in their development, initially progressing through a growth stage, moving on to a transition stage and finally assuming a steady-state or constant growth state. However, the U.S. public utility industry is a long-standing industry in the U.S., dating back to approximately 1882[15]. The standards of rate of return regulation of public utilities date back to the previously discussed principles of fair rate of return established in the Hope[16] and Bluefield[17] decisions of 1944 and 1923, respectively. Hence, the public utility industry in the U.S. is a stable and mature industry characterized by the steady-state or constant-growth stage of a multi-stage DCF model. The economics of the utility industry, including the water utility industry, reflect this relative stability and demand maturity. As regulated businesses, their returns on capital investment, i.e., rate base, are set through a ratemaking process and not determined in the competitive markets. This characteristic, taken together with the longevity of the public utility industry, all contribute to the stability and maturity of the industry, including the water utility industry.

Since there is no basis for applying multi-stage growth versions of the DCF

[15] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, 1988, Public Utilities Reports, Inc., Arlington, VA, p. 334.

[16] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

[17] Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1923).

model to determine the common equity cost rates of mature public utility companies, the constant growth model is most appropriate.

Q. Please describe the dividend yield you used in your application of the DCF model.

A. The unadjusted dividend yields are based upon an average of a recent spot date (September 15, 2009) as well as an average of the three months ended August 31, 2009, respectively, which are derived on Schedule PMA-6. The average unadjusted yield is 3.29% and the median unadjusted yield is 3.12% for the six water companies and 4.57% and 4.60%, respectively, for the eight LDCs.

Q. Please explain the dividend growth component shown on Schedule PMA-5, column 2.

A. Because dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment to the dividend yield must be made. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

Since the various companies in the proxy groups increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component expression, or $D_{1/2}$. This is a conservative approach which does not overstate the dividend yield which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column 1 on Schedule PMA-5 have been adjusted upward to reflect one-half the growth rates shown in Column 4.

Q. Please explain the basis of the growth rates of the proxy groups which you use in your application of the DCF model.

A. Schedule PMA-7 shows that approximately 57% of the common shares of the six water companies and 46% of the common shares of the eight LDCs are held by individuals as opposed to institutional investors. Individual investors are particularly likely to place great significance on the opinions expressed by financial information services, such as Value Line and Reuters, which are easily accessible and/or available on the Internet and through public libraries. Investors realize that analysts have significant insight into the dynamics of the industries and they analyze individual companies as well as companies' abilities to effectively manage the effects of changing laws and regulations and ever changing economic and market conditions.

Over the long run, there can be no growth in DPS without growth in EPS. Earnings expectations have a more significant, but not sole, influence on market prices than dividend expectations. Thus, the use of earnings growth rates, i.e., earnings expectations in a DCF analysis provides a better matching between investors' market appreciation expectations implicit in market prices and the growth rate component of the DCF, having a significant influence on market prices which affect market price appreciation and hence, the "growth" experienced by investors. This should be evident even to relatively unsophisticated investors just by listening to financial new reports on radio, TV or reading the newspapers. In

fact, Dr. Morin in his book, New Regulatory Finance, (2006) states on page 298[18]:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of g. The accuracy of these forecasts in the sense of whether they turn out to be correct is not at issue here, as long as they reflect widely held expectations. As long as the forecasts are typical and/or influential in that they are consistent with current stock price levels, they are relevant. The use of analysts' forecasts in the DCF model is sometimes denounced on the grounds that it is difficult to forecast earnings and dividends for only one year, let alone for longer time periods. This objection is unfounded, however, because it is present investor expectations that are being priced; it is the consensus forecast that is embedded in price and therefore in required return, and not the future as it will turn out to be.
>
> * * *
>
> Published studies in the academic literature demonstrate that growth forecasts made by security analysts represent an appropriate source of DCF growth rates, are reasonable indicators of investor expectations and are more accurate than forecasts based on historical growth. These studies show that investors rely on analysts' forecasts to a greater extent than on historic data only.

In addition, Myron Gordon, the "father" of the standard regulatory version of the DCF model widely utilized throughout the United States in rate base/rate of return regulation has recognized the significance of analysts' forecasts of growth in EPS in a speech he gave in March 1990 before the Institute for Quantitative Research and Finance. He said:

> We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks. . . estimates by security analysts available from sources such as IBES are far superior to the data

[18] Morin 298.

> available to Malkiel and Cragg. Eq (7) is not as elegant as Eq (4), but it has a good deal more intuitive appeal. It says that investors buy earnings, but what they will pay for a dollar of earnings increases with the extent to which the earnings are reflected in the dividend or in appreciation through growth.

Professor Gordon recognized that total return is largely affected by the terminal price which is mostly affected by earnings (hence price / earnings multiples). However, while EPS is the most significant factor influencing market prices, it is by no means the only factor that affects market prices, a fact recognized by Bonbright with regard to public utilities as discussed previously.

Studies performed by Cragg and Malkiel[19] demonstrate that analysts' forecasts are superior to historical growth rate extrapolations. Some question the accuracy of analysts' forecast of EPS growth, however, it does not really matter what the level of accuracy of those analysts' forecasts is well after the fact. What is important is that they influence investors and hence the market prices they pay. Moreover, there is no empirical evidence that investors consistent with the EMH, would discount or disregard analysts' estimates of growth in earnings per share. The "semistrong" form of the EMH which is generally held to be true indicates that all perceived risks are taken into account by investors in the prices they pay for securities and investors are aware of all publicly-available information, including bond ratings, discussions about companies by bond rating agencies and investment analysts, as well as the many analysts earnings growth forecasts available. Investors are also aware of the accuracy of past forecasts, whether for EPS or DPS growth or for interest rates levels. Investors have no prior knowledge

[19] John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices (University of Chicago Press, 1982) Chapter 4.

of the accuracy of any forecasts available at the time they make their investment decisions, as that accuracy only becomes known after some future period of time has elapsed. Therefore, consistent with the EMH upon which the cost of common equity models I utilize are based, since investors have such analysts' earnings growth rate projections available to them and investors are aware of the accuracy of such projections, analysts earnings projections should be relied upon in a cost of common equity analysis.

In addition to the empirical and academic support discussed previously regarding the superiority of analysts' EPS growth forecasts in response to recent concern about the use of analysts' forecasts, Dr. Burton G. Malkiel, the Chemical Bank Chairman's Professor of Economics at Princeton University and author of the widely read national bestseller book on investing entitled, "A Random Walk Down Wall Street," before the Public Service Commission of South Carolina, in November 2002 Professor Malkiel affirmed his belief in the superiority of analysts' earnings forecasts when he testified:

> With all the publicity given to tainted analysts' forecasts and investigations instituted by the New York Attorney General, the National Association of Securities Dealers, and the Securities & Exchange Commission, I believe the upward bias that existed in the late 1990s has indeed diminished. In summary, I believe that current analysts' forecasts are more reliable than they were during the late 1990s. Therefore, analysts' forecasts remain the proper tool to use in performing a Gordon Model DCF analysis. (Rebuttal testimony, South Carolina Electric and Gas Co., pp. 16-17, Docket No. 2002-223-E)

Consequently, I have reviewed analysts' projected growth in EPS, as well as Value Line's projected five-year compound growth rates in EPS for each company in the proxy groups which are summarized on page 1, Schedule PMA-8.

Q. Please summarize the DCF model results.

A. As shown on Schedule PMA-5, the result of the application of the single-stage DCF model is 11.25% using the average and 11.49% when using the median value of the six water companies results. As also shown on Schedule PMA-5, the results of the application of the single-stage DCF model is 9.04% using the average and 8.85% when using the median value of the eight AUS LDCs' result. In arriving at conclusions of indicated common equity cost rate for the proxy groups, I have relied upon the median of the results of the DCF. I utilize the median due to the wide range of DCF results as well as the currently extremely volatile capital market conditions. In my opinion, the median is a more accurate and reliable measure of central tendency, and provides recognition to all the DCF results.

In view of the foregoing, as shown on Schedule PMA-5 the indicated common equity cost rate based upon the application of the DCF model is 11.49% for the six water companies and 8.85% for the eight LDCs.

C. <u>The Risk Premium Model (RPM)</u>

Q. Please describe the theoretical basis of the RPM.

A. Risk Premium theory indicates that the cost of common equity capital is greater than the prospective company-specific cost rate for long-term debt capital. In other words, the cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium to compensate common shareholders for

the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings with debt holders being first in line. Therefore, investors require higher returns from common stocks than from investment in bonds to compensate them for bearing the additional risk.

While the investors' required common equity return cannot be directly determined or observed, bond returns and yields can. According to RPM theory one can assess a common equity risk premium over bonds, either historically or prospectively, one can use that premium to derive a cost rate of common equity.

In summary with RPM theory, the cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings.

Q. Have you performed RPM analyses of common equity cost rate for the proxy groups?

A. Yes. The results of my application of the RPM are summarized on page 1 of Schedule PMA- 9. The first step is to determine the expected bond yield.

Q. Please explain the basis of the expected bond yields of 6.13% and 6.42% applicable to the average company in each proxy group, respectively.

A. Because the cost of common equity is prospective, a prospective yield on similarly-rated long-term debt is essential. As shown on Schedule PMA-9, page 2, although based upon only one water company, the average Moody's bond

rating is A2 for the six water companies while the average Moody's bond rating is A3 for the eight LDCs. I relied upon a consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the second calendar quarter of 2010 as derived from the September 1, 2009 Blue Chip Financial Forecasts (shown on page 7 of Schedule PMA-9). As shown on Line No. 1 of page 1 of Schedule PMA-9, the average expected yield on Moody's Aaa rated corporate bonds is 5.60%. It is necessary to adjust that average yield to be equivalent to a Moody's A2 rated public utility bond. Consequently, an adjustment to the average prospective yield on Aaa rated corporate bonds of 0.53% was required. It is shown on Line No. 2, page 1 of Schedule PMA-9 and explained in Note 2 at the bottom of the page. After adjustment, the expected bond yield applicable to a Moody's A rated public utility bond is 6.13% as shown on Line No. 3, page 1 of Schedule PMA-9.

Because the proxy group of six water companies average Moody's bond rating is A2, no adjustment is necessary to make the prospective bond yield applicable to an A2 public utility bond. However, because the average Moody's bond rating of the proxy group of eight LDCs is A3, an adjustment of 29 basis points (0.29%) is necessary to make the prospective bond yield applicable to an A3 public utility bond. Therefore, the expected specific bond yields is 6.13% for the proxy group of water companies and 6.42% for the proxy group of gas distribution companies.

Q. Please explain the method utilized to estimate the equity risk premium.

A. I evaluated the results of two different historical equity risk premium studies, as well as Value Line's forecasted total annual market return in excess of the prospective yield on high grade corporate bonds, as detailed on pages 5, 6 and 8 of Schedule PMA-9. As shown on Line No. 3, page 5, the mean equity risk premium is 4.94% applicable to the proxy group of six water companies and 4.40% applicable to the proxy group of eight LDCs. These estimates are the result of an average of a beta-derived historical equity risk premium exclusively as will be discussed subsequently as well as the mean historical equity risk premium applicable to public utilities with bonds rated A based upon holding period returns.

The basis of the beta-derived equity risk premiums applicable to the proxy groups is shown on page 6 of Schedule PMA-9. The beta-determined equity risk premium should receive substantial weight because betas are derived from the market prices of common stocks over a recent five-year period. Beta is a meaningful measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a relative share of the market's total equity risk premium.

The total market equity risk premium utilized is 7.15% and is based upon a weighted average of the long-term historical market risk premium based upon two different historical equity risk premium studies as well as a forecasted market risk premium. To derive the historical market equity risk premium, I

used the most recent Morningstar[20] data on holding period returns for the S&P 500 Composite Index and the average historical yield on Moody's Aaa and A rated corporate bonds for the period 1926-2008. The use of holding period returns over a very long period of time is useful in the beta approach because it is consistent with the long-term investment horizon presumed by the DCF model. As the Ibbotson SBBI – 2009 Valuation Yearbook – Market Result for Stocks, Bonds, Bills and Inflation – 2006-2008, (Ibbotson SBBI) states[21]:

> The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5] Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.
>
> Some analysts estimate the expected equity risk premium using a shorter, more recent time period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s and 1940s contain too many unusual events. This view is suspect because all periods contain ''unusual" events. Some of the most unusual events this century took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, the development of the European Economic Community, and the attacks of September 11, 2001.
>
> It is even difficult for economists to predict the economic environment of the future. For example, if one were analyzing the stock market in 1987 before the crash, it would be statistically improbable to predict the impending short-term

[20] Morningstar, Inc. acquired Ibbotson Associates in 2006.

[21] Ibbotson SBBI – 2009 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation – 1926 – 2008 (Morningstar, Inc., 2009) 61.

> volatility without considering the stock market crash and market volatility of the 1929-1931 period.
>
> Without an appreciation of the 1920s and 1930s, no one would believe that such events could happen. The 83-year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this. (footnote omitted)

The basis of the forecasted market equity risk premium can be found on Line Nos. 4 through 6 on page 6 of Schedule PMA-9. It is derived from an average of the most recent 3-month (using the months of June 2009 through August 2009) and a recent spot (September 18, 2009) median market price appreciation potentials by Value Line as explained in detail in Note 1 on page 3 of Schedule PMA-10. The average expected price appreciation is 69% which translates to 14.02% per annum and, when added to the average (similarly calculated) dividend yield of 2.34% equates to a forecasted annual total return rate on the market as a whole of 16.36%. Thus, this methodology is consistent with the use of the 3-month and spot dividend yields in my application of the DCF model. To derive the forecasted total market equity risk premium of 16.36% shown on Schedule PMA-9, page 6, Line No. 6, the September 1, 2009 forecast of about 50 economists of the expected yield on Moody's Aaa rated corporate bonds for the six calendar quarters ending with the fourth calendar quarter 2010 of 5.60% from Blue Chip Financial Forecasts was deducted from

the Value Line total market return of 16.36%. The calculation resulted in an expected market risk premium of 10.76%.

Although the general consensus in September 2009 was that the recession was then over or nearly over, the pace of recovery remained and continues to remain uncertain. Despite recent substantial increases in the stock market, and signs of a recovery in some areas of the housing market and in consumer spending at the time, it remained and still remains unclear when the economy will begin to show persistent signs of a clear and sustainable recovery.

The Associated Press (AP) reported on September 20, 2009[22] that, "The S&P has skyrocketed 58 percent since its bottom in early March, while the Dow is up 50 percent. The Nasdaq has surged 68 percent during that time." As the Wall Street Journal (WSJ)[23] reported on September 15, 2009, "U.S. Federal Reserve Chairman Ben Bernanke said it's likely the recession has come to an end, but he reiterated that tight credit conditions and a soft labor market will prove to be a challenge." Further, the WSJ noted that Bernanke "added that even if recovery is underway, it's still going to feel like a very weak economy because credit conditions remain tight and any decline in the unemployment rate will probably only happen gradually."

In addition to the rally in the stock market over the last several months, the Associated Press (AP)[24] reported on September 21, 2009, that the Conference Board's "forecast of economic activity rose in August for the fifth straight

[22] "Stocks Due for Pullback – Perhaps This Week", The Associated Press, September 20, 2009.

[23] "Bernanke Sees Recovery, Defends Fed Actions", Wall Street Journal (WSJ.com) September 15, 2009.

[24] "Leading Indicators Rise for the Fifth Straight Month", The Associated Press, September 21, 2009.

month, the latest sign the recession has neared an end." The AP quoted Jennifer Lee, an economist at BMO Capital Markets as stating that "[t]he recession's end is no longer a source of heated discussion … but whether or not the economy can keep grinding forward (and at what speed) is still a big question mark." Conference Board economist Ken Goldstein stated that the August index of leading indicators, coupled with an accompanying index measuring the current state of the business cycle which was flat in August, suggest "that the recession is bottoming out … recovery is very near … [b]ut the intensity of that recovery is more uncertain."

Value Line, in its "Economic and Stock Market Commentary" of September 25, 2009[25] noted that consumer spending is improving, surging by 2.7% in August, "the best showing in three years" and that "[t]he rest of the economy is also finding renewed strength." Value Line further expects "the economy's modest winning streak [to] probably continue in the fourth quarter 2009" but that the gains will be uneven, "as the nation finally emerges from the deepest recession in decades." Value Line concluded its commentary with its belief "that some investor caution is appropriate now".

Consequently, while the recession appeared at or nearing an end, recovery was expected to be slow and not without pressures and uncertainty. Utilities must compete for capital in the foreseeable future during a possibly slow and uncertain recovery with not only other utilities, but all companies in the capital market place. Hence, in my opinion, some weight must be also given to the current forecasted market risk premium.

[25] Value Line Investment Survey, Selection & Opinion, September 25, 2009, 3293.

Therefore, in arriving at my conclusion of equity risk premium of 7.15% on Line No. 7 on page 6 of Schedule PMA-9, I gave 70% weight to the historical equity risk premium of 5.60% and 30% weight to the forecasted equity risk premium of 10.76% shown on Line Nos. 3 and 6, respectively (7.15% = (70% x 5.60%) + (30% x 10.76%)).

On page 9 of Schedule PMA-9, the most current Value Line betas available in September 2009 for the companies in the proxy groups are shown. Applying the median beta of the proxy group, consistent with my reliance upon the median DCF results as previously discussed, to the market equity risk premium of 7.15% results in a beta adjusted equity risk premium of 5.72% for the proxy group of six water companies and 4.65% for the proxy group of eight LDCs as shown on page 6, Line No. 9.

A mean equity risk premium of 4.15% applicable to companies with A rated public utility bonds was calculated based upon holding period returns from a study using public utilities, as shown on page 5 and detailed on page 8.

The equity risk premiums applicable to the proxy group of six water companies and eight LDCs are the averages of the beta-derived premiums and that based upon the holding period returns of public utilities with A rated bonds, as summarized on Schedule PMA-9, page 5, i.e., 4.94% and 4.40%, respectively.

Q. What are the indicated RPM common equity cost rates?

A. They are 11.07% for the six water companies and 10.82% for the eight LDCs as shown on Schedule PMA-9, page 1.

D. The Capital Asset Pricing Model (CAPM)

Q. Please explain the theoretical basis of the CAPM.

A. CAPM theory defines risk as the covariability of a security's returns with the market's returns. This covariability is measured by beta ("β"), an index measure of an individual security's variability relative to the market. A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, i.e., all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. In addition, the CAPM presumes that investors require compensation for these systematic risks which are caused by macroeconomic and other events that affect the returns on all assets. Essentially, the model is applied by adding a risk-free rate of return to a market risk premium. This market risk premium is adjusted proportionately to reflect the systematic risk of the individual security relative to the market as measured by beta. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where:

R_s	=	Return rate on the common stock
R_f	=	Risk-free rate of return
R_m	=	Return rate on the market as a whole
β	=	Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have confirmed its validity. These tests

have measured the extent to which security returns and betas are related as predicted by the CAPM. However, Morin observes that while the results support the notion that beta is related to security returns, it has been determined that the empirical Security Market Line (SML) described by the CAPM formula is not as steeply sloped as the predicted SML. Morin[26] states:

> With few exceptions, the empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$[27]

In view of theory and practical research, I have applied both the traditional CAPM and the empirical CAPM to the companies in the proxy group and averaged the results.

Q. Please describe your selection of a risk-free rate of return.

A. As shown at the top of Column 3 on page 2 of Schedule PMA-10, the risk-free rate adopted for both applications of the CAPM is 4.67%. It is based upon the

[26] Morin 175.

[27] Morin 190.

average consensus forecast of the reporting economists in the September 1, 2009 Blue Chip Financial Forecasts as shown in Note 2, page 3, of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the fourth calendar quarter 2010 as derived in Note 2 on page 3 of Schedule PMA-10.

Q. Why is the prospective yield on long-term U.S. Treasury Bonds appropriate for use as the risk-free rate?

A. The yield on long-term U.S. Treasury T-Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds. Hence, it is consistent with the long-term investment horizon inherent in utilities' common stocks, as well as the long-term investment horizon presumed in the standard DCF model employed in regulatory ratemaking. Moreover, it is also consistent with the long-term life of the jurisdictional rate base to which the allowed fair rate of return, i.e., cost of capital will be applied. Morin[28] discusses several reasons why the yield on long-term U.S. Treasury bonds is appropriate as the risk-free rate:

- Common stock is a long-term investment with the dividend cash flows to investors lasting indefinitely. Hence, the yield on very long-term government bonds, such as, the yield on 30-year Treasury bonds, is the best measure of the risk-free rate for use in the CAPM.
- The expected common stock return is based on long-term cash flows, regardless of an individual's holding time period.
- Stability and consistency, i.e., the yields on long-term Treasury bonds match more closely with expected common stock returns.
- Yields on 90-day Treasury Bills typically do not match the investor's planning horizons. Investors in common stocks, typically, have an investment horizon greater than 90 days.
- Short-term rates are volatile, fluctuating widely, and subject to more

[28] Morin 151.

random disturbances than are long-term rates, resulting in volatile and unreliable common equity return estimates.

- Short-term rates are also largely "administered" rates, and used by the Federal Reserve as a policy vehicle for economic stimulation and money supply control. Foreign governments, companies, and individuals also use them as a temporary safe harbor for money.

In addition, as noted in the Ibbotson SBBI[29]:

> Although the equity risk premia of several horizons are available, the long-horizon equity risk premium is preferable for use in most business-valuation settings, even if an investor has a shorter time horizon. Companies are entities that generally have no defined life span; when determining a company's value, it is important to use a long-term discount rate because the life of the company is assumed to be infinite. For this reason, it is appropriate in most cases to use the long-horizon equity risk premium for business valuation.

Q. Please explain the estimation of the expected equity risk premium for the market.

A. After estimating the investors' historical and projected the market equity risk premium is derived form an average of the most recent 3-month (using the months of June 2009 through August 2009) and a recent spot (September 18, 2009) 3-5 years median total market price appreciation projections from Value Line discussed previously, and the long term historical arithmetic mean total returns for the years 1926-2008 on large company stocks firm. Ibbotson – SBBI total return rate for the market, I subtract the appropriate historical and projected risk-free rates to arrive at an equity risk premiums for the market. As explained below, I used a weighted average of these premiums and applied the proxy groups' respective betas to arrive at company specific risk premiums. As a measure of risk relative to the market as a whole, it is appropriate to use beta to

[29] Ibbotson SBBI 59.

apportion the market risk premium to a specific company or group.

The derivation of this market equity risk premium is explained in detail in Note 1 on page 3 of Schedule PMA-10. The appreciation potential projections by Value Line plus the average projected dividend yield equate to a forecasted annual total return rate on the market of 16.36%. The long-term historical return rate of 11.70% on the market as a whole In each instance, the relevant risk-free rate was deducted from the total market return rate. For example, from the Value Line projected total market return of 16.36%, the forecasted average risk-free rate of 4.67% was deducted indicating a forecasted market risk premium of 11.69%. From the Ibbotson-SBBI long-term historical total return rate of 11.70%, the long-term historical income return rate on long-term U.S. Government Securities of 5.20% was deducted indicating an historical equity risk premium of 6.50%. The projected and historical total market risk premiums of 11.69% and 6.50%, average is 9.10%. However, for reasons stated previously relative to my RPM analysis, I will give 70% weight to the historical market risk premium of 6.50% and 30% weight to the forecasted market risk premium of 11.69% which results in a market risk premium of 8.06% (70% x 6.50%) + (30% + 11.69%).

Q. What are the results of your application of the traditional and empirical CAPM to the proxy groups?

A. As shown on Schedule PMA-10, Line No. 1 of page 1, the traditional CAPM cost rates are 11.12% for the proxy group of six water companies and 9.91% for

the proxy group of eight LDCs. And, as shown on Line No. 2 of page 1, the empirical CAPM cost rates are 11.52% for the six water companies and 10.61% for the eight LDCs. The traditional and empirical CAPM cost rates are shown individually by company on page 2. As with the DCF results discussed previously, and for the same reasons, namely the range of results and the current extremely volatile capital markets, I rely upon the median results of the traditional CAPM and ECAPM for the proxy group. As shown on Line No. 3 on page 1, the CAPM cost rate applicable to the proxy group of six water companies is 11.32%, and the CAPM cost rate applicable to the proxy group of eight LDCs is 10.26% based upon the traditional and empirical CAPM.

E. Comparable Earnings Model (CEM)

Q. Please describe your application of the comparable earnings model and how it is used to determine common equity cost rate.

A. My application of the CEM is summarized on Schedule PMA-11 which consists of four pages. Pages 1 and 2 show the CEM results for the proxy group of six water companies and page 3 shows the CEM results for the proxy group of eight LDCs. Page 4 contains notes related to pages 1 through 3.

The comparable earnings approach is derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, it is consistent with the Hope doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks.

The CEM is based upon the fundamental economic concept of opportunity cost which maintains that the true cost of an investment is equal to the cost of the best available alternative use of the funds to be invested. The opportunity cost principle is also consistent with one of the fundamental principles upon which regulation rests: that regulation is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

The CEM is designed to measure the returns expected to be earned on the book common equity, in this case net worth, of similar risk enterprises. Thus, it provides a direct measure of return, since it translates into practice the competitive principle upon which regulation rests. In my opinion, it is inappropriate to use the achieved returns of regulated utilities of similar risk because to do so would be circular as achieved returns are a function of authorized ROEs and inconsistent with the principle of equality of risk with non-price regulated firms.

Consequently, the first step in determining a cost of common equity using the comparable earnings model is to choose an appropriate proxy group or groups of non-price regulated firms. The proxy group(s) should be broad-based in order to obviate any company-specific aberrations. As stated previously, utilities need to be eliminated to avoid circularity since the returns on book common equity of utilities are substantially influenced by regulatory awards and are therefore not representative of the returns that could be earned in a truly competitive market.

Q. Please describe your application of the CEM.

A. As stated previously, my application of the CEM is market-based in that the selection of non-price regulated firms of comparable risk is based upon statistics derived from the market prices paid by investors.

I have chosen two proxy groups of domestic, non-price regulated firms to reflect both the systematic and unsystematic risks of the proxy groups of six water companies and eight LDCs, respectively. The proxy group of one hundred fifteen non-utility companies similar in risk to the proxy group of six water companies and twenty-five non-utility companies similar in risk to the proxy group of eight LDCs are listed on pages 1 through 3 of Schedule PMA-11. The criteria used in the selection of these proxy companies were that they be domestic non-utility companies and have a meaningful rate of return on net worth, common equity or partners' capital reported in Value Line (Std. Ed.) projected for 2012-2014. Value Line betas were used as a measure of systematic risk. The standard error of the regression was used as a measure of each firm's unsystematic or specific risk with the standard error of the regression reflecting the extent to which events specific to a company's operations will affect its stock price. In essence, companies which have similar betas and standard errors of the regressions, have similar investment risk, i.e., the sum of systematic (market) risk as reflected by beta and unsystematic (business and financial) risk, as reflected by the standard error of the regression, respectively. Those statistics are derived from regression analyses using market prices which, under the EMH reflect all relevant risks. The application of these criteria results in proxy groups

of non-price regulated firms similar in risk to the average company in each proxy group.

Using a Value Line, Inc. proprietary database dated September 15, 2009, proxy groups of one hundred fifteen and twenty-five, respectively, non-price regulated companies were chosen based upon ranges of unadjusted beta and standard error of the regression. The ranges were based upon the average standard deviations of the unadjusted beta and the average standard error of the regression for the proxy group of six water companies and the proxy group of eight LDCs as explained in Notes 1 and 7 on page 4 of Schedule PMA-11.

In my opinion this selection methodology is meaningful and effectively responds to the criticisms normally associated with the selection of non-regulated firms presumed to be comparable in total risk. This is because the selection of non-price regulated companies comparable in total risk is based upon regression analyses of market prices which reflect investors' assessment of all risks, diversifiable and non-diversifiable. Thus, the empirical selection process results in companies comparable in total risk, (i.e.) both systematic and unsystematic risks.

Once proxy groups of non-price regulated companies are selected, it is then necessary to derive returns on book common equity, net worth or partners' capital for the companies in the group. These are using the rate of return on common equity net worth, or partners' capital reported by Value Line (Std. Ed.) projected for the next five-year period, consistent with the use of five-year projected EPS growth rates in the DCF model.

Q. What are your conclusions of CEM cost rate?

A. For the proxy group of six water companies, my conclusion based upon the average of the median of all of the five-year projected returns on book common equity, net worth or partners' capital is 14.50% as shown on page 2 of Schedule PMA-11. And my conclusion for the proxy group of eight LDCs based upon the average of the median of all of the five-year median projected returns on book common equity, net worth or partners' capital is 21.25% as shown on page 3.

As with the DCF and CAPM results discussed previously, I have again relied upon median and for the same reasons, namely, the wide range of returns and the extreme volatility of the current capital markets. After I apply a test of significance (Student's t-statistic) to determine whether any of the projected returns are significantly different from their respective means at the 95% confidence level, the projected means of several companies have been excluded. After excluding these outliers, my conclusion of CEM cost rate is 14.00% for the six water companies and 21.00% for the eight gas distribution companies. In my opinion, the 21.00% CEM result for the eight LDCs is an outlier when compared with the six water companies' 14.00% CEM result and with the results of the other cost of common equity models for the eight LDCs. Therefore, I will not rely upon it in determining a common equity cost rate based upon the eight LDCs.

IX. CONCLUSION OF COMMON EQUITY COST RATE RANGE

Q. What is your range of recommended common equity cost rate?

A. It is 10.55%-12.80% based upon the common equity cost rates resulting from all four cost of common equity models consistent with the EMH which logically mandates the use of multiple cost of common equity models as adjusted for United's greater business risk.

Moreover, absent empirical evidence to the contrary, it is reasonable to assume that investors rely equally upon multiple cost of common equity models in arriving at their required returns on common equity. Therefore, in formulating my recommended range of common equity cost rate of 10.55%-12.80%, I reviewed the results of the application of four different cost of common equity models, namely, the DCF, RPM, CAPM, and CEM for the two proxy groups. I employ all four cost of common equity models as primary tools in arriving at my recommended common equity cost rate because: 1) no single model is so inherently precise that it can be relied upon solely, to the exclusion of other theoretically sound models; 2) all four models have application problems with them; 3) all four models are based upon the Efficient Market Hypothesis (EMH), which, as previously discussed, requires the assumption that investors rely upon multiple cost of common equity models; and 4) as demonstrated previously, the prudence of using multiple cost of common equity models is supported in the financial literature. Therefore, none should be relied upon exclusively to estimate investors' required rate of return on common equity.

The results of the four cost of common equity models applied to the

proxy groups of six water companies and the proxy group of eight LDCs are shown on Schedule PMA- 1, page 2 and summarized below:

Table 4

	Proxy Group of Six AUS Utility Reports Water Companies	Proxy Group of Eight AUS Utility Rpts. Gas Distribution Companies
Discounted Cash Flow Model	11.49%	8.85%
Risk Premium Model	11.07	10.82
Capital Asset Pricing Model	11.32	10.26
Comparable Earnings Model	14.00	NMF
Indicated Range of Common Equity Cost Rate Before Financial and Business Risk Adjustment	12.25%	9.90%
Business Risk Adjustment	0.55	0.60
Indicated Range of Common Equity Cost Rate after Adjustment for Business Risk	12.80%	10.55%
Recommended Range of Common Equity Cost Rate	10.55% - 12.80%	

Based upon these common equity cost rate results, I conclude that a range of common equity cost rates of 9.90% to 12.25% is indicated based upon the use of multiple common equity cost rate models applied to the market data of the two proxy groups and before the previously discussed business risk adjustments as shown on Line No. 5, page 2 of Schedule PMA-1. However, this common equity cost rate range is applicable to larger, less business risk proxy groups.

Q. Is there a way to quantify a business risk adjustment due to United's small size relative to the proxy group?

A. Yes. As discussed previously, United has greater business risk than the average proxy group company because of its smaller size relative to the proxy group, whether measured by book capitalization or the market capitalization of common equity (estimated market value for United, whose common stock is not traded). Therefore, it is necessary to upwardly adjust the common equity cost rate range of 9.90% to 12.25% based upon the two proxy groups. Based upon United's size, an adjustment of 3.83% (383 basis points) is necessary to reflect its size relative to the market-based common equity cost rates of the six water companies and an adjustment of 4.18% (418 basis points) is necessary to reflect its size relative to the eight LDCs. These adjustments are based upon data contained in the Ibbotson SBBI. The determinations are based on the size premiums for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2008 period and related data shown on pages 3 through 14 of Schedule PMA-1. The average size premium for the decile in which each proxy group falls has been compared to the average size premium for the 10^{th} decile in which United would fall if its stock were traded and sold at the September 15, 2009 average market/book ratio of 200.0% and 151.3% experienced by each proxy group, respectively. As shown on page 3, the size premium spread between United and the six water companies is 3.83% and between United and the eight LDCs is 4.18%.

Although business risk adjustments of 3.83% (383 basis points) is indicated based upon the six water companies and 4.18% (418 basis points) is indicated based upon the eight LDCs, respectively. I will make conservatively

reasonable business risk adjustments of 55 basis points (0.55%) relative to the six water companies and 60 basis points (0.60%) relative to the eight LDCs as shown on Line No. 6 on page 2 of Schedule PMA-1 to the indicated common equity cost rate ranges of each proxy group to reflect United's greater relative investment risk as discussed previously. The risk-adjusted common equity cost rates are thus 12.80% for the six water companies and 10.55% for the eight LDCs.

In view of the foregoing, my recommended common equity cost rate range is 10.55%-12.80% (with a midpoint of 11.68% which, when applied to the Company's requested common equity ratio of 46.70% at December 31, 2008 results in a range of overall rate of return of 8.45%-9.50% which, in my opinion, is both reasonable and conservative and will provide United with sufficient earnings to enable it to attract necessary new capital.

Q. **Does that conclude your direct testimony?**

A. Yes.

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

PAULINE M. AHERN, CRRA
PRINCIPAL

AUS CONSULTANTS

PROFESSIONAL QUALIFICATIONS
OF
PAULINE M. AHERN, CRRA
PRINCIPAL
AUS CONSULTANTS

PROFESSIONAL EXPERIENCE

1994-Present

In 1996, I became a Principal of AUS Consultants, continuing to offer testimony as an expert witness on the subjects of fair rate of return and cost of capital before state public utility commissions. I provide assistance and support to clients throughout the entire ratemaking litigation process.

As the Publisher of AUS Utility Reports (formerly C. A. Turner Utility Reports), I am responsible for the production, publishing, and distribution of the reports. AUS Utility Reports provides financial data and related ratios for about 125 public utilities, i.e., electric, combination gas and electric, natural gas distribution, natural gas transmission, telephone, and water utilities, on a monthly, quarterly and annual basis. Among the subscribers of AUS Utility Reports are utilities, many state regulatory commissions, federal agencies, individuals, brokerage firms, attorneys, as well as public and academic libraries. The publication has continuously provided financial statistics on the utility industry since 1930.

As the Publisher of AUS Utility Reports, I supervise the production, publishing, and distribution of the AGA Rate Service publications under license from the American Gas Association. I am also responsible for maintaining and calculating the performance of the AGA Index, a market capitalization weighted index of the common stocks of the approximately 70 corporate members of the AGA. In addition, I supervise the production of a quarterly survey of investor-owned water company rate case activity on behalf of the National Association of Water Companies.

As an Assistant Vice President from 1994 - 1996, I prepared fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. These supporting exhibits include the determination of an appropriate ratemaking capital structure and the development of embedded cost rates of senior capital. The exhibits also support the determination of a recommended return on common equity through the use of various market models, such as, but not limited to, Discounted Cash Flow analysis, Capital Asset Pricing Model and Risk Premium Methodology, as well as an assessment of the risk characteristics of the client utility. I also assisted in the preparation of responses to any interrogatories received regarding such testimonies filed on behalf of client utilities. Following the filing of fair rate of return testimonies, I assisted in the evaluation of opposition testimony in order to prepare interrogatory questions, areas of cross-examination, and rebuttal testimony. I also evaluated and assisted in the preparation of briefs and exceptions following the hearing process. I have submitted testimony before state public utility commissions regarding appropriate capital structure ratios and fixed capital cost rates.

1990-1994

As a Senior Financial Analyst, I supervised two analysts in the preparation of fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. The team also assisted in the preparation of interrogatory responses.

I evaluated the final orders and decisions of various commissions to determine whether further actions are warranted and to gain insight which may assist in the preparation of future rate of return studies.

I assisted in the preparation of an article authored by Frank J. Hanley and A. Gerald Harris entitled “Does Diversification Increase the Cost of Equity Capital?” published in the July 15, 1991 issue of Public Utilities Fortnightly.

I co-authored an article with Frank J. Hanley entitled "Comparable Earnings: New Life for an Old Precept" which was published in the American Gas Association's Financial Quarterly Review, Summer 1994.

I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the National Society of Rate of Return Analysts (now the Society of Utility and Regulatory Financial Analysts (SURFA)). This designation is based upon education, experience and the successful completion of a comprehensive examination.

As Administrator of Financial Analysis for AUS Utility Reports, which reports financial data for over 200 utility companies and has approximately 1,000 subscribers, I oversee the preparation of this monthly publication, as well as the annual publication, Financial Statistics - Public Utilities.

1988-1990

As a Financial Analyst, I assisted in the preparation of fair rate of return studies including capital structure determination, development of senior capital cost rates, as well as the determination of an appropriate rate of return on equity. I also assisted in the preparation of interrogatory responses, interrogatory questions of the opposition, areas of cross-examination and rebuttal testimony. I also assisted in the preparation of the annual publication C. A. Turner Utility Reports - Financial Statistics -Public Utilities.

1973-1975

As a research assistant in the Research Department of the Regional Economics Division of the Federal Reserve Bank of Boston, I was involved in the development and maintenance of econometric models to simulate regional economic conditions in New England in order to study the effects of, among other things, the energy crisis of the early 1970's and property tax revaluations on the economy of New England. I was also involved in the statistical analysis and preparation of articles for the New England Economic Review. Also, I acted as assistant editor for New England Business Indicators.

1972

As a research assistant in the Office of the Assistant Secretary for International Affairs, U.S. Treasury Department, Washington, D.C., I developed and maintained econometric models which simulated the economy of the United States in order to study the results of various alternate foreign trade policies so that national trade policy could be formulated and recommended.

I am also a member of the Society of Utility and Regulatory Financial Analysts (formerly the National Society of Rate of Return Analysts).

Clients Served

I have offered expert testimony before the following commissions:

Arkansas
California
Connecticut
Delaware
Florida
Hawaii
Idaho
Illinois
Indiana
Iowa
Kentucky
Louisiana
Maine
Maryland
Michigan
Missouri
Nevada
New Jersey
New York
North Carolina
Ohio
Pennsylvania
South Carolina
Virginia
Washington

I have sponsored testimony on the rate of return and capital structure effects of merger and acquisition

issues for:

California-American Water Company
New Jersey-American Water Company

I have sponsored testimony on fair rate of return and related issues for:

Alpena Power Company
Applied Wastewater Management, Inc.
Aqua Illinois, Inc.
The Connecticut Water Company, Inc.
Aqua Virginia, Inc.
Artesian Water Company
The Atlantic City Sewerage Company
Audubon Water Company
The Borough of Hanover, PA
Carolina Pines Utilities, Inc.
Carolina Water Service, Inc. of NC
Carolina Water Service, Inc. of SC
The Columbia Water Company
Consumers Illinois Water Company
Consumers Maine Water Company
Consumers New Jersey Water Company
City of DuBois, Pennsylvania
Elizabethtown Water Company
Emporium Water Company
GTE Hawaiian Telephone Inc.
Greenridge Utilities, Inc.
Illinois American Water Company
Iowa American Water Company
Land'Or Utility Company
Long Neck Water Company
Louisiana Water Service, Inc.
Massanutten Public Service Company
Middlesex Water Company
Missouri-American Water Company
Mt. Holly Water Company
Nero Utility Services, Inc.
New Jersey-American Water Company
The Newtown Artesian Water Company
NRG Energy Center Pittsburgh LLC
NRG Energy Center Harrisburg LLC
Ohio-American Water Company
Penn Estates Utilities
Pinelands Water Company
Pinelands Waste Water Company
Pittsburgh Thermal
San Jose Water Company
Southland Utilities, Inc.
Spring Creek Utilities, Inc.
Sussex Shores Water Company
Tega Cay Water Service, Inc.
Total Environmental Services, Inc.
Treasure Lake Water & Sewer Divisions
Thames Water Americas
Tidewater Utilities, Inc.
Transylvania Utilities, Inc
Trigen-Philadelphia Energy Corporation
Twin Lakes Utilities, Inc.
United Utility Companies
United Water Arkansas, Inc.
United Water Arlington Hills Sewerage, Inc.
United Water Connecticut, Inc.
United Water Delaware, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Jersey, Inc.
United Water New Rochelle, Inc.
United Water New York, Inc.
United Water Owego / Nichols, Inc.
United Water Pennsylvania, Inc.
United Water South County, Inc.
United Water Toms River, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
United Water West Milford, Inc.
Utilities, Inc.
Utilities Inc. of Central Nevada
Utilities, Inc. of Florida
Utilities, Inc. of Louisiana
Utilities Inc. of Nevada
Utilities, Inc. of Pennsylvania
Utilities, Inc. - Westgate
Utilities Services of South Carolina
Utility Center, Inc.
Valley Energy, Inc.
Water Services Corp. of Kentucky
Wellsboro Electric Company
Western Utilities, Inc.

I have sponsored testimony on capital structure and senior capital cost rates for the following clients:

Alpena Power Company
Arkansas-Western Gas Company
Associated Natural Gas Company
PG Energy Inc.
United Water Delaware, Inc.
Washington Natural Gas Company

I have assisted in the preparation of rate of return studies on behalf of the following clients:

Algonquin Gas Transmission Company
Anadarko Petroleum Corporation
Arkansas-Louisiana Gas Company
Arkansas Western Gas Company
Artesian Water Company
Associated Natural Gas Company
Atlantic City Electric Company
Bridgeport-Hydraulic Company
Cambridge Electric Light Company
Carolina Power & Light Company
Citizens Gas and Coke Utility
City of Vernon, CA
Columbia Gas/Gulf Transmission Cos.
Commonwealth Electric Company
Commonwealth Telephone Company
Conestoga Telephone & Telegraph Co.
Connecticut Natural Gas Corporation
Consolidated Gas Transmission Company
Consumers Power Company
CWS Systems, Inc.
Delmarva Power & Light Company
East Honolulu Community Services, Inc.
Equitable Gas Company
Equitrans, Inc.
Florida Power & Light Company
Gary Hobart Water Company
Gasco, Inc.
GTE Arkansas, Inc.
GTE California, Inc.
GTE Florida, Inc.
GTE Hawaiian Telephone
GTE North, Inc.
GTE Northwest, Inc.
GTE Southwest, Inc.
Great Lakes Gas Transmission L.P.
Hawaiian Electric Company
Hawaiian Electric Light Company
IES Utilities Inc.
Illinois Power Company
Interstate Power Company
Interstate Power & Light Co.
Iowa Electric Light and Power Company
Iowa Southern Utilities Company
Kentucky-West Virginia Gas Company
Lockhart Power Company
Middlesex Water Company
Milwaukee Metropolitan Sewer District
Mountaineer Gas Company
National Fuel Gas Distribution Corp.
National Fuel Gas Supply Corp.
Newco Waste Systems of NJ, Inc.
New Jersey Natural Gas Company
New Jersey-American Water Company
New York-American Water Company
North Carolina Natural Gas Corp.
Northumbrian Water Company
Ohio-American Water Company
Oklahoma Natural Gas Company
Orange and Rockland Utilities
Paiute Pipeline Company
PECO Energy Company
Penn Estates Utilities, Inc
Penn-York Energy Corporation
Pennsylvania-American Water Co.
PG Energy Inc.
Philadelphia Electric Company
Providence Gas Company
South Carolina Pipeline Company
Southwest Gas Corporation
Stamford Water Company
Tesoro Alaska Petroleum Company
Tesoro Refining & Marketing Co.
United Telephone of New Jersey
United Utility Companies
United Water Arkansas, Inc.
United Water Delaware, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Jersey, Inc.
United Water New York, Inc.
United Water Pennsylvania, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
Utilities, Inc of Pennsylvania
Utilities, Inc - Westgate
Vista-United Telecommunications Corp.
Washington Gas Light Company
Washington Natural Gas Company
Washington Water Power Corporation
Waste Management of New Jersey – Transfer Station A
Wellsboro Electric Company
Western Reserve Telephone Company
Western Utilities, Inc.
Wisconsin Power and Light Company

EDUCATION:

1973 – Clark University – B.A. – Honors in Economics
1991 – Rutgers University – M.B.A. – High Honors

PROFESSIONAL AFFILIATIONS:

American Finance Association
Financial Management Association
Society of Utility and Regulatory Financial Analysts
President – 2006-2008 and 2008-2010
Secretary/Treasurer – 2004-2006
Energy Association of Pennsylvania
National Association of Water Companies – Member of the Finance Committee

SPEAKING ENGAGEMENT:

"New Approach to Estimating the Cost of Common Equity Capital for Public Utilities" (co-presenter with Richard A. Michelfelder, Ph.D. - Advanced Workshop in Regulation and Competition, 28th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI) at Rutgers University, May 14, 2009.

Moderator: Society of Utility and Regulatory Financial Analysis: 41st Financial Forum – "Estimating the Cost of Capital in Today's Economic and Capital Market Environment" April 16-17, 2009, Washington, DC

AWWA Pre-Conference Workshop – Water Utility Ratemaking – March 25, 2008, Atlantic City, NJ
Topic: "Water Utility Financing: Where Does All That Cash Come From?"

PAPERS:

"New Approach to Estimating the Cost of Common Equity Capital for Public Utilities", co-authored with Frank J. Hanley and Richard A. Michelfelder, forthcoming.

"Comparable Earnings: New Life for an Old Precept" co-authored with Frank J. Hanley, Financial Quarterly Review, (American Gas Association), Summer 1994.